

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
Office of Engineering & Construction

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Commissioner

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Lt. Governor

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TO: David Rosenblatt, Administrator

FROM: Chris Constantino for Bill Dixon, Manager

DATE: January 27, 2016

SUBJECT: Initial Coastal Storm Survey & Damage Assessment

Atlantic Ocean, Delaware Bay and Raritan Bay shorelines

January 22 through January 25, 2016

SUMMARY:

Since 2013, many beaches along the Jersey Coast (including the Delaware and Raritan shorelines), have been the recipients of a federal beachfill project or another form of shore protection - a majority of the beachfill projects were previously constructed projects that were renourished, however several are new construction and have either been recently completed, are currently ongoing or have not been constructed. As a result, New Jersey's beaches are in various states, ranging from stable and protective to erosional and vulnerable. Since the September/October 2015 prolonged northeast event, there haven't been any significant events which has allowed recovery to occur - this recovery has been both natural and man-made. There have been, however, several episodes of wave activity that have created periods of larger surf but negative impacts have not been observed with the exception of several hot spot locations and some slowing of the recovery process.

On Friday, January 22, 2016, a robust low pressure system developed off of the Carolina coast - the dynamics supporting this developing low were the ingredients for a dangerous storm. By Saturday, this low pressure was a large and dangerous storm, spreading its impacts from the Carolinas to New England with strong winds and precipitation types ranging from rain to heavy snow. Blizzard conditions battered the upper Delmarva region through New York including New Jersey, with many areas receiving 20 to 30 inches of snow. These blizzard conditions generated high seas, which coupled with the full moon, propagated moderate to large surf and elevated water levels. This resulted in varying levels of erosion along the New Jersey Coast.

During this event, winds from the northeast and north-northeast gusted to nearly 60 mph creating seas as high as 27 feet. These conditions developed surf ranging from 6 to 15 feet with greater heights around jetties, groins, inlets and piers throughout the state. The conditions began to subside on January 24th, 2016.

Staff from the Bureau of Coastal Engineering conducted a town by town visual survey of the New Jersey coastline on Sunday January 24, 2016 and Monday January 25, 2016; the results of which are contained in this report. During the compilation of this report, the surf conditions ranged from 2 to 4 feet, depending on the location and winds were variable. A detailed summary listed by municipality from north to south follows this report. Of the 66 municipalities/beach areas surveyed, 26 were determined to have minor beach or dune erosion, 21 had moderate beach or dune erosion and 19 had major beach or dune erosion. Criteria for determining damage levels are listed at the end of this report.

LOCATION	INSPECTION NOTES	DAMAGE LEVEL*
PERTH AMBOY	No major incidents or damage reported.	Minor
SOUTH AMBOY	No major incidents or damage reported.	Minor
OLD BRIDGE	Sloped beach erosion 1 - 2' high, 20 - 25' wide Small beach remains	Minor
ABERDEEN	No major incidents or damage reported.	Minor
ABERDEEN CLIFFWOOD BEACH	Sloped beach erosion 1 - 2' high, 25 - 50' wide Small beach remains.	Minor
KEYPORT	No major incidents or damage reported.	Minor
UNION BEACH	Sloped beach erosion 1 - 2' high, 25 - 50' wide.	Minor
KEANSBURG	Sloped beach erosion 1 - 2' high, 20 - 25' wide Additional retreat of the previously documented (1/15/16) vertical scarps 3' - 5' high	Minor
KEANSBURG BAYSHORE FLOODGATE	Sloped beach erosion 1 - 2' high, 20 - 25' wide.	Minor
MIDDLETOWN PORT MONMOUTH	Sloped beach erosion 1 - 2' high, 20 - 30' wide. Several sections with vertical scarps up to 1' high.	Minor
MIDDLETOWN BELFORD	Some erosion to the containment dike at the CDF.	Minor
MIDDLETOWN LEONARDO	No major incidents or damage reported.	Minor
ATLANTIC HIGHLANDS	No major incidents or damage reported.	Minor
HIGHLANDS	No major incidents or damage reported.	Minor
SEA BRIGHT	Sloped beach erosion 2 - 4' high, 25 - 75' wide No overwash at opening in wall at municipal lot or adjacent to Highland Bridge.	Minor

MONMOUTH BEACH	Sloped beach erosion Sloped beach erosion 2 - 4' high, 50' - 75' wide.	Minor
LONG DD ANGU	No overwash at opening in wall at Valentine St.	3.4
LONG BRANCH	Sloped beach erosion Sloped beach erosion 2 - 4' high, 25' - 75' wide	Minor
	Some overtopping of bulkheads in Elberon.	
DEAL	Sloped beach erosion 3 - 5' high, 50 - 175' wide	Moderate
ALLENHURST	Sloped beach erosion 2 - 4' high, 20 - 25' wide	Minor
LOCH ARBOUR	Sloped beach erosion 2 - 4' high, 25 - 50' wide	Minor
ASBURY PARK	Sloped beach erosion 7 - 8' high, 60 - 100' wide	Moderate
NEPTUNE	Sloped beach erosion 7 - 8' high, 80 - 110' wide	Moderate
OCEAN GROVE		26.1
BRADLEY BEACH	Sloped beach erosion 7 - 8' high, 30 - 50' wide	Moderate
AUON	Several sections with vertical scarps up to 3' high	36.1
AVON	Sloped beach erosion 7 - 8' high, 100 - 120' wide.	Moderate
BELMAR	Sloped beach erosion 7 - 8' high, 80 - 100' wide.	Moderate
SPRING LAKE	Sloped beach erosion 7 - 8' high, 70 - 90' wide.	Moderate
SEA GIRT	Sloped beach erosion 7 - 8' high, 60 - 100' wide.	Moderate
MANASQUAN	Sloped beach erosion 7 - 8' high, 80 - 150' wide.	Moderate
POINT PLEASANT	Sloped beach erosion 8 - 10' high, 80 - 150' wide	Moderate
BEACH	Dune fence damaged on the south end & water up to dunes.	
BAY HEAD	Sloped beach erosion 8 - 10' high, 90 - 120' wide	Major
	Seaward slope and crest of revetment exposed for a majority of the length.	
MANTOLOKING	Sloped beach erosion 7 - 8' high, 65 - 100' wide	Major
	6 to 15' of steel wall exposed, rock revetment exposed.	
BRICK	Sloped beach erosion 10 - 15' high, 90 - 100' wide	Major
	4 - 15' of wall exposed for the majority of the length.	
	Some sections of wall were not exposed at Brick Beach 1.	
	50 - 100° of cap and scour apron damaged on the return at the southern end	
TOMS RIVER	Sloped beach erosion 7 - 8' high, 80 - 100' wide	Major
NORMANDY BEACH	Atlantic Way to 2 nd Ave. – 10 - 14' vertical cut in dune, 20	1114101
	- 25' wide.	

LAVALLETTE	Sloped beach erosion 7 - 8' high, 100 - 150' wide entire	Major
	town	
	Northern end – no dune erosion	
	Brooklyn Ave. – 4 - 6' vertical dune cut	
	Southern End – 12 - 14' vertical dune cut, 15 - 20' wide	
TOMS RIVER	Sloped beach erosion 7 - 8' high, 70 - 80' wide	Major
ORTLEY BEACH	No dunes remain	
	Almost overwashed at 4 th St.	
	Damaged crossover structures	
SEASIDE HEIGHTS	Sloped beach erosion 7 - 8' high, 100 - 150' wide	Moderate
	Debris was noted.	
SEASIDE PARK	Sloped beach erosion 7 - 8' high, 80 - 100' wide	Moderate
	Some sand fence down in southern end.	
BERKELEY TWP.	Sloped beach erosion 7 - 8' high, 80 - 100' wide	Moderate
SOUTH SEASIDE PARK		
BERKELEY TWP.	Per Island Beach State Park staff - Sloped beach erosion 4	Moderate
ISLAND BEACH STATE	- 5' high for the length of the park.	
PARK	Small sections of overwash in the dune system, up 2 - 6'	
	of vertical scarping in dunes for 5 miles	
	Damaged sand fencing & storm debris washed up	
BARNEGAT LIGHT	Sloped beach erosion 5' in height for a width of 150' for	Moderate
	entire length of town.	
	Sporadic dune erosion 7' in height, 12' in width for entire	
	length of town.	
LONG BEACH TWP.	Sloped beach erosion 5' in height for a width of 150' for	Major
LOVELADIES	entire length of town.	
	Sporadic dune erosion 4 - 5' in height, 10' wide for entire	
	length of town.	
HARVEY CEDARS	Sloped beach erosion 5' in height for a width of 150' for	Major
	entire length of town.	-
	Bergen Ave. to Hudson Ave. – Dune erosion 5 - 6' high,	
	15' wide	
	<u>Hudson Ave. to Sussex Ave.</u> – Dune erosion 15 - 18' high,	
	75 - 90' wide – entire eastern slope of dune eroded	
	Sussex Ave. to northern Border – Dune erosion 4' high by	
	10' wide	

LONG BEACH TWP. NORTH BEACH	Sloped beach erosion 5' in height for a width of 150' for entire length of town. Sporadic dune erosion 4' high, 8' wide for entire length of town.	Major
SURF CITY	Sloped beach erosion 5' in height for a width of 150' for entire length of town. 25 th - 12 th St Dune erosion 8' high, 12' wide 12 th St. to southern Border - Dune erosion 4' high, 12' wide	Major
SHIP BOTTOM	Sloped beach erosion 5' in height for a width of 150' for entire length of town. No noted dune erosion.	Moderate
LONG BEACH TWP. BRANT BEACH	Sloped beach erosion 5' in height for a width of 150' for entire length of town. 31 st – 57 th St. – Dune erosion 4 - 6' high, 25' wide 57 th – 80 th St. – Dune erosion 4 - 5' high, 20' wide 81 st – 132 nd St. – No noted dune erosion 34 th to 17 th St. (North Beach Haven) – No dune erosion 17 th St. – Dune erosion 5', high, 25' width 16 th St. – Dune erosion 8' high, 35' wide 15 th St. – Dune erosion 12' high, 50' wide 14 th -12 th St. – Dune erosion 16' high (to top of dune), eastern slope is gone at 12 th St. , width of 70'	Major
BEACH HAVEN	Sloped beach erosion 5' in height for a width of 150' for entire length of town. Few locations noted as dune erosion – 5 - 6' by 20' wide In front of the Shell (Centre St.) - Dune erosion 3' high, 10' wide Pearl St Dune erosion 6' wide, 16' wide, 400' in length Belvoir St. to Essex St Dune erosion 8' high, 30' wide Holyoke Ave. to Leeward Ave water interaction but no dune erosion Leeward/Merivale/Nelson - Dune washed out, overwash noted in adjacent properties, geotube completely exposed. Town plans to truck in sand for the Leeward – Nelson area.	Major

Sloped beach erosion 5' in height for a width of 150' for	Major
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	Moderate
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25 - 50' of sloped erosion 3 - 4' in height throughout	Moderate
municipality.	
Erosion along much of the municipality's dunes from	
Cedar Grove Ave to Benson Ave 3 - 5' in height.	
Dune fence down along this stretch.	
Evidence of ocean flooding east of Atlantic Ave.	
especially at Sumner Ave, Jerome Ave, and Iroquois Ave.	
	Moderate
municipality.	
Stairs damaged at 23 rd Ave street end.	
	Erosion along much of the municipality's dunes from Cedar Grove Ave to Benson Ave 3 - 5' in height. Dune fence down along this stretch. Evidence of ocean flooding east of Atlantic Ave. especially at Sumner Ave, Jerome Ave, and Iroquois Ave. 25 - 50' of sloped erosion 3 - 4' in height throughout municipality.

50 - 75' of sloped erosion 1 - 3' in height throughout	Major
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•	
	Moderate
<u>inlet</u>) - Downed trees and other debris observed. Loose	
core stone from the seawall displaced onto road.	
Natural Area - 200' of sloped erosion up to 2 - 3' in	
height. 300' of significant sloped erosion on the corner of	
the planform.	
Natural Area to Whale Beach - 200' of sloped erosion up	
to 2 - 3' in height. No dune impact.	
2 nd to 40 th Street - 175' of sloped erosion up to 2 - 4' in	Major
height.	_
Vertical dune erosion up to 10' in height and 3' wide.	
+/- 150 LF of sand fence down.	
40 th -57 th Street - 175' of sloped erosion up to 2 - 4' in	
height.	
Vertical dune erosion up to 10 - 12' in height and 4' wide.	
Crossovers and ADA Ramps damaged.	
57 th -93 rd Street - 175' of sloped erosion up to 2 - 4' in	
	Major
Vertical dune erosion up to 10' in height and 5' wide.	
Some damage to crossovers.	
24 th Street and South - 75' of sloped erosion up to 3 - 5' in	
height.	
	municipality. Dune erosion from St. James Pl to Moorlyn Terr 4 - 7' in height. Dune fence down along this stretch. Corson's Inlet/Ocean Drive Bridge (located inside the inlet) - Downed trees and other debris observed. Loose core stone from the seawall displaced onto road. Natural Area - 200' of sloped erosion up to 2 - 3' in height. 300' of significant sloped erosion on the corner of the planform. Natural Area to Whale Beach - 200' of sloped erosion up to 2 - 3' in height. No dune impact. 2nd to 40th Street - 175' of sloped erosion up to 2 - 4' in height. Vertical dune erosion up to 10' in height and 3' wide. +/- 150 LF of sand fence down. 40th - 57th Street - 175' of sloped erosion up to 2 - 4' in height. Vertical dune erosion up to 10 - 12' in height and 4' wide. Crossovers and ADA Ramps damaged. 57th - 93rd Street - 175' of sloped erosion up to 2 - 4' in height. Minimal Vertical dune erosion. 10th - 17th Street - 75' of sloped erosion up to 3 - 5' in height. Vertical dune erosion up to 12' in height. Loose rocks exposed. 17th - 24th Street - 75' of sloped erosion up to 3 - 5' in height. Vertical dune erosion up to 10' in height and 5' wide. Some damage to crossovers. 24th Street and South - 75' of sloped erosion up to 3 - 5' in

STONE HARBOR	80 th – 109 th Street - 100' of sloped erosion up to 3 - 5' in height. Vertical dune erosion up to 12' in height and 15 - 20' wide. 109 th -123 th Street - Vertical dune erosion up to 10 - 12' in height and 15-20' wide. 123 rd Street to Groin - Significant vertical dune erosion up to 12 - 15' in height and 25 - 30' wide. Federal dune impacted.	Major
NORTH WILDWOOD	Hereford Inlet - 60' of sloped erosion up to 3 - 4' in height. Vertical dune erosion up to 5' in height and 10' wide. Displaced core stone noted from seawall at Hoffman and Mace Avenue & at St. Demetrios Avenue. 2 nd - 15 th Street - 225' of sloped erosion up to 3 - 5' in height. Vertical dune erosion up to 5' in height and 10' wide. Some damage to crossovers. 15 th - 26 th Street - 225' of sloped erosion up to 3 - 5' in height. Vertical dune erosion up to 10 - 12' in height and 20 - 25' wide.	Major
WILDWOOD CITY	500' of sloped erosion up to 3 - 5' in height. No outfalls excavated prior to storm.	*Minor (due to width of beach)
WILDWOOD CREST	500' of sloped erosion up to 3 - 5' in height.	*Minor (due to width of beach)
LOWER TWP. DIAMOND BEACH	200' of sloped erosion up to 3 - 4' in height. Vertical dune erosion up to 10' in height and 4 - 6' wide.	*Minor (due to width of beach)
CAPE MAY CITY	40' of sloped erosion up to 1 - 3' in height. No dune impact. Minor amounts of sand overwash at Wilmington Ave.	Minor
LOWER TWP. WEST CAPE MAY	30' of sloped erosion up to 1 - 3' in height. No dune impact.	Minor
CAPE MAY POINT	60' of sloped erosion up to 3 - 4' in height. Vertical dune erosion near Lincoln Ave (150LF) up to 8' in height and 4' wide.	Minor

DELAWARE BAY	Minimal sloped erosion observed for entire bayside unless	Minor
	otherwise noted. Moderate flooding observed during high	
	tide in various locations.	
	East Point - No damage to lighthouse or other structures.	
	<u>Heislerville</u> - No damage to the main dike structure, some	
	scour on the I-5 cross dike.	
	<u>Fortescue - Vertical dune erosion up to 2' in height for</u>	
	3,000 LF. Vertical dune erosion up to 5' for 500 LF. Deck	
	damaged at home near marina.	
	Gandy's Beach - Severe sloped erosion. Damage to	
	existing crossovers. Portions of concrete block revetment	
	displaced.	
	Money Island - Some sand overwash noted.	
	Reed's Beach $-0-1$ ' of sloped erosion approximately 25'	
	wide.	
	Oakwood Beach - Site of recent USACE beach	
	nourishment project; no issues noted.	

* Damage Levels:

<u>Major erosion</u> – consists of significant or total beach berm loss and/or erosion and scarping of the dunes <u>Moderate erosion</u> – consists of significant scarping and/or significant sloped erosion of beach berm <u>Minor erosion</u> – consists of loss of sand without significant scarping or sloped erosion